27 May 2012

At its General Assembly in Beijing in August, 2012, the International Astronomical Union will deliberate re-defining a basic measurement in common use by astronomers. This measurement known as the "astronomical unit" has been considered to be the average distance of the Earth from the Sun. It has been defined officially since 1938 and unofficially since the 19th century by a mathematical expression involving the mass of the Sun, the length of the day and a fixed number first proposed by a famous German mathematician, Carl Friedrich Gauss, in 1809. This style of definition was useful for many years because astronomers were not able to make distance measurements in the solar system as precisely as they could measure angles. However, the accuracy of modern determinations of distances in the solar system makes this no longer a consideration. In August astronomers will consider changing the definition to be just a fixed number of meters -- 149 597 870 700 to be exact. This number is proposed in order to be consistent with the current mathematical definition, but by changing the official definition, astronomers will eliminate concerns about different types of time scales and theories of solar system motions. It will also make it easier to deal with possible variations in the mass of the Sun. The issue mainly concerns those working in the field of high-accuracy solar system research. The astronomical unit is also used in the definition of other astronomical measurement scales but the relative difference between the old and the new definitions is so small that there would be no significant effect in changing our understanding of distances to objects outside our solar system considering the precision with which they are known today.